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ABSTRACT

This study is a preliminary attempt to characterize the development of students' conceptions of education in a comprehensive fashion. The participants were recruited from a middle class suburban school district in Michigan. Seventy students in grades 3, 6, 9, and 12 were interviewed about several issues related to each of the following: (1) the purposes of education; (2) the process of learning; (3) the nature of intelligence; and (4) what should be taught in schools. Both increasing linear age trends and U-shaped developmental patterns were found. Conceiving of learners as actively involved --rather than as passive recipients--increases progressively with age, as does the valuing of "nontraditional" educational objectives (music, art, etc.). Sixth graders believe more strongly than other groups in the modifiability of intelligence through one's own efforts, resulting in a U-shaped trend for this variable. In addition, oldest and youngest students both believe strongly (compared with middle school students) in the intrinsic value of education, and in the value of "metaeducational" objectives (moral behavior, independent thinking, etc.), resulting in U-shaped trends for these variables. The overall pattern of results suggests a restructuring of knowledge about education across the school years, and three stages in this developmental progression are tentatively described. (Author/JAZ)

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Development of Conceptions of Education

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Abstract

Seventy students in grades 3, 6, 9, and 12 were interviewed about several issues related to each of the following: (a) the purposes of education, (b) the process of learning, (c) the nature of intelligence, (d) what should be taught in schools. Both increasing linear age trends and U-shaped developmental patterns were found. Conceiving of learners as actively involved — rather than as passive recipients — increases progressively with age, as does the valuing of "nontraditional" educational objectives (music, art, etc.). Sixth graders believe more strongly than other groups in the modifiability of intelligence through one's own efforts, resulting in a U-shaped trend for this variable. In addition, oldest and youngest students both believe strongly (compared with middle school students) in the intrinsic value of education, and in the value of "metaeducational" objectives (moral behavior, independent thinking, etc.), resulting in U-shaped trends for these variables. The overall pattern of results suggests a restructuring of knowledge about education across the school years, and three stages in this developmental progression are tentatively described.

Development of Conceptions of Education

Recent theoretical formulations have classified the realm of social cognition into the domains of moral knowledge, personal (e.g., self-concept) knowledge, and societal knowledge (Turiel, 1983; Turiel & Davidson, 1986). Previous investigations of the development of societal knowledge have focused for example on social convention (Davidson, Turiel & Black, 1983; Nucci & Nucci, 1982), authority relations (Damon, 1977; Tisak, 1983), and governmental and economic arrangements (Connell, 1971; Furth, 1978, 1980). These studies and others in related areas indicate that children develop societal concepts by a sequence of stages, in which each stage constitutes a reorganization of earlier thinking.

One societal institution with which children and adolescents have a good deal of experience is school. If one assumes that children and adolescents actively interpret and attempt to understand their social environment, then one would expect that they develop implicit theories about educational purposes and processes. A number of recent studies provide information on various aspects of students' perceptions of schooling, achievement, and ability (Weinstein, 1983). For instance, Nicholls (1978) found a

four-stage sequence between ages 5 and 13 in children's ability to differentiate ability from effort, and to coordinate judgments about the influence of ability and effort upon achievement. Dweck (Dweck and Bempechat, 1983) has documented two distinct implicit theories of intelligence, the "entity" and the "incremental," and their connection with achievement. Tharinger (1983) discovered a stage sequence in children's development of knowledge about the process of learning.

The present study is a preliminary attempt to characterize the development of students' conceptions of education in a comprehensive fashion, by focusing on a number of interrelated, educationally-relevant dimensions, in interviews with students from grades three through twelve. It was expected that systematic age trends would be found, along with evidence that higher levels of knowledge are attained through reorganization of previous knowledge.

Method

Seventy students in grades three through twelve were individually interviewed about (a) the definition and purposes of education, (b) the process of learning, (c) the nature of intelligence, and (d) what should be taught in schools. The participants were recruited from a middle

class suburban school district in Michigan, and included twenty students from each of grades three, six, and nine, and ten students from grade twelve. Equal numbers of boys and girls were included in each age group. The interviews followed a standard but open-ended format. After responding to each question, students were encouraged to elaborate and present reasons for their views. Interviews were tape recorded and later transcribed.

Interview items.

Included in the interview were a set of five questions intended to elicit students' opinions about the purpose of schooling and the meaning of education: (1) "What is the main reason for having schools?" (2) "What if the people in (student's town) decided to close down the schools. Would that be OK?" (3) "What if you were very rich and knew you would never need to work. Would you still need to go to school?" (4) "What does education mean to you?" (5) "Is education different from going to school--does it happen at other times?"

A second set of questions addressed the nature of learning, focusing in particular on whether it is viewed as an active construction or an external imposition: (6) "Do you think most kids want to go to school to learn, or would they rather not?" (7) "Is it better to try and understand

how problem solving in math works, or is it better to try and memorize the facts about problem solving?" (8) "How do little kids first learn to speak English?" (9) "How do kids first learn that 5 + 5 = 10? Can they learn it without being taught?" (10) "Think of the first people who ever knew that 5 + 5 = 10. How do you think they found it out?"

Another set of seven questions asked students to reason about the nature of intelligence: (11) "How can you tell if a person is smart?" (12) "Is knowing a lot of things the same as being smart?" (13) "Do kids get smarter as they get older?" (14) "Think of two 4-year olds; the first one is smart and the second one is not. When they get older, would it be possible for the second one to be smarter than the first?" (15) "Can people become smarter by trying harder?" (16) "Does school help people get smarter?" (17) "How important is it to try and seem smart to other people?"

Midway through the interview, the interviewer produced a pack of 15 index cards, in random order, which were labeled with various topics or activities that are (sometimes) taught in schools. After some discussion, if needed, to clarify the referent for each card, the students' task was to rank order the cards according to the importance of teaching the corresponding topics or skills in schools. The topics were intended to represent a range of possible

educational objectives, including academic objectives: (1) English, (2) Math, (3) Reading, (4) Science, (5) Social studies; nonacademic objectives: (6) Art, (7) Computers, (8) Gym, (9) Health and safety, (10) Music; and metaeducational objectives: (11) How to behave toward others (i.e., moral behavior), (12) Independent thinking, (13) Learning how to learn, (14) Good manners, (15) Good work habits.

Coding.

One of the ultimate goals of this project is to derive qualitative descriptions of the organization of thought with respect to the domain of education, at different age levels. However, the focus of the present report is more limited. The immediate goal is to provide concise descriptions of subjects' reasoning about the four areas mentioned (schooling, learning, intelligence, and curriculum) which will provide a framework for further, more qualitative analyses. Accordingly, the present coding scheme was designed to classify students' responses into simple and discrete categories.

For the first set of questions, the basic distinction coded was whether schooling is viewed as intrinsically or extrinsically valuable. That is, responses to each question

in this category were examined for assumptions about whether education is valuable basically for its own sake (e.g., "I wouldn't want them to close the schools, because I like to learn new things all the time." "It wouldn't really bother me because I could still find a way to learn."); or valuable basically as a means to an end (e.g., "They shouldn't close the school; I think it would be very hard to get a good job." "Kids have to go to school because its the law.").

Coding for the set of questions concerned with the nature of learning distinguished a view of learners as active participants (e.g., "You should try to understand how math works, so you can do a problem without having to use the book"); versus a view of learners as passive recipients of instruction from authorities (e.g., "It's better to memorize the right answers, then you know they are right.")

The third set of questions, dealing with intelligence, were coded to distinguish dynamic from static conceptions of ability (comparable to Dweck's "incremental" and "entity" categories). That is, answers were coded according to whether they emphasized one's ability to modify intelligence through effort (e.g., "Even the dumber kid could get smarter if he tried real hard in school"), or emphasized the idea of intelligence as a stable trait (e.g., "I do think some people are just smarter, and they will probably stay

smarter").

Reliability and Scale Scoring.

The data reduction strategy was to composite subjects' responses within each category listed above to yield a single scale score for (a) intrinsic, (b) active, and (c) dynamic orientations; and (d) traditional academic, (e) nonacademic, and (f) metaeducational objectives. Before proceeding, measures of association (phi coefficients for dichotomous variables; factor analysis for ordinal variables) among items within each category were computed to determine whether they could be reliably composited. For the first category (intrinsic orientation), items 4 and 5 were not in line with the others and were therefore excluded from the composite. In the second category (active orientation), items 6 and 10 were excluded for the same reason; and item 17 was similarly excluded from the third category (dynamic orientation).[1] Interrater reliability was assessed by recoding half the transcripts (n = 36) by a second judge; percent agreement on the interview items ranged from 69% to 94% with an average of 78%.

To derive scale scores for distinct types of educational objectives, students' ratings of the fifteen topics were factor analyzed. Three factors were obtained and are listed in Table 1. The factors differ from the a

priori categorization described earlier in that students evaluate science and social studies as more akin to nonacademic than to traditional academic subjects, and in that health and safety does not systematically fall in any of the three categories. Based on these loadings, a score for traditional objectives was composited from ratings given to (1) English, (2) Math, and (3) Reading; a score for nontraditional objectives was composited from ratings for (4) Science, (5) Social Studies, (6) Art, (7) Computers, (8) Gym, and (10) Music; and a score for metaeducational objectives was composited from (11) Behavior toward others, (12) Independent thinking, (13) Learning to learn, (14) Manners, and (15) Work habits.

Insert Table 1 about here

Results and Discussion

Table 2 presents the age trends for the major composite variables. The findings reveal both linear developmental trends and U-shaped conceptual growth. I will consider each of these effects in turn, beginning with the increasing age trends, and interpret each with reference to analyses of separate items making up the composite measure.

Insert Table 2 about here

Linear Age Trends

Conceiving of learning as an active process increases substantially as a function of age, consistent with Tharinger's (1983) finding of an increasingly internal conception of learning across the same age range. Item analyses indicate, for example, that in third grade 29% believe it is better to try and understand math procedures than to memorize externally given math facts; the proportion increases to 60% in grades six and nine, and 80% in grade twelve, *tau* = .32, *p* < .01. Only 16% of third graders believe that youngsters actively seek to master language (most believe it is learned through direct instruction by elders), compared with 20% of sixth graders, 40% of ninth graders, and 60% of twelfth graders, *tau* = .33, *p* < .01.

A second substantial trend is the increased valuing of nontraditional academic objectives across grade level. Significant age trends are found for all items included in this category, the strongest being for the teaching of computer skills, which received mean rankings below 5 from third graders, and above 10 from ninth and twelfth graders, *F* = 15.02, *p* < .001. It might be suspected that

the lower importance placed on nontraditional topics by young students would be attributable to a response bias toward giving highest rankings to the more stereotypical, traditional topics. However, Table 2 also indicates an increased valuing of traditional topics between grades three and six. Third graders' mean rankings on all three traditional items (English, Math, Reading) are significantly lower than those of the other groups. Lower rankings by third graders for both traditional and nontraditional topics, relative to other groups, are associated with third graders' relatively high approval of metaeducational objectives.

Nonlinear Age Trends

The conception of intelligence as modifiable by one's own effort manifests a moderate U-shaped growth, with sixth and ninth graders more convinced of modifiability than either third or twelfth graders. However, it is important to qualify this description with reference to specific interview items. Two items, dealing with the nature of intelligence, in fact show an increasing linear trend: Asked to describe how they know if a person is smart (question 11), 21% of third graders refer to the person's efforts, rather than static conditions such as having a good report card; corresponding proportions are 45% of sixth and

ninth graders, and 62% of twelfth graders, tau = .27, $p < .05$. Similarly, only 30% of third graders distinguish (question 12) between the amount of facts known and what one does with one's knowledge, as an indicator of intelligence, compared with 68% of sixth graders, 79% of ninth graders, and 89% of twelfth graders, tau = .47, $p < .001$.

The remaining items of this category deal more specifically with the modifiability of intelligence. The significant quadratic trend for the scale score (see Table 2) is due to sixth graders being more certain than other groups that intelligence is modifiable under most circumstances. Thus, 68% of sixth graders believe an unintelligent 4-year old can, through making efforts, grow up to surpass his more intelligent peer; this compares with 41% of third graders, 56% of ninth graders, and 25% of twelfth graders.

These results indicate an increasing ability across age levels to reason about psychological causation, and are in line with previous findings (e.g., Lou, 1978; Nicholls, 1978) of development in reasoning about the nature of intelligence and achievement. Thus, there is an increasing trend toward thinking about intelligence as an active and effortful process, rather than a static given. Nonetheless, as Nicholls (1978) has shown, during adolescence students

begin to clearly differentiate effort from ability, and to consider them as independent sources of achievement. This is borne out in the present finding of a decreasing tendency between grades six and twelve to view intelligence as modifiable under all circumstances.

The final two composite variables need to be considered in conjunction. The first, intrinsic goals of schooling, deals with the importance of knowledge above and beyond its social desirability or commercial payoff; the second, metaeducational objectives, deals with the importance of basic values and skills that go beyond specific course contents. The same developmental trend is seen in both measures: highest scores are found at the youngest age level; scores decline through grades six or nine, followed by a rise at grade twelve. For example, when asked about the main reason for schools (interview question 1), 56% of third graders refer to a need and desire to learn, rather than to social function rationales such as preparing for future jobs. The proportion drops to 22% by sixth grade and 16% by ninth grade. This is perhaps not surprising since during the same period students are constructing increasingly accurate theories about the nature of societal organization (Furth, 1980), and are increasingly concerned with their future roles in it. Therefore it is noteworthy

that the proportion of intrinsic rationales climbs again to 44% by twelfth grade.

All five items in the metaeducational objectives category show a similar U-shaped pattern (see Table 3). Third graders generally agree that school is a good place to impart dispositions toward proper interpersonal behavior, independent thinking, learning to learn, good manners, and good work habits. Sixth and ninth graders are rather skeptical about these objectives; but by twelfth grade, students again endorse most of them, especially learning to learn.

Recently Nicholls, Patashnick, and Nolen (1985) found that high school students who hold extrinsic conceptions of the purpose of education (e.g., obtaining prestige or a good job) were more likely to have somewhat cynical attitudes toward school achievement. One might therefore be led to consider the sharp increase in extrinsic conceptions found here between grades three and nine as an indictment of the motivational messages about the reasons for schooling that are provided to students by educators and parents. However, the consistent increase in appreciation of intrinsic and metaeducational factors between grades nine and twelve suggests instead that the extrinsic orientation may be a developmental phenomenon that students in the middle grades

experience as they develop knowledge about society and about the relation of education to other social institutions.

Insert Table 3 about here

Conclusion

Although only tentative conclusions can be drawn from these data, the findings are consistent with the hypothesis of a restructuring of knowledge about education across the school years. The overall pattern of results suggests an interpretation along the following lines: At third grade, students have a global enthusiasm for what schools can accomplish and for their own relation to schooling. They take for granted their role as learners and the intrinsic value of learning. They are accordingly hopeful that what can be learned in class goes beyond subject matter and includes virtues such as moral behavior, independent thinking, and work habits.

In grades six through nine, students are gaining what might be called a conscientious orientation toward schooling. They are increasingly aware of the active nature of learning, and more likely than other age groups to feel that intelligence is what one makes of it. They conceive of

education in the context of larger societal systems -- realizing that eventually they will apply their knowledge to make a living and to contribute to society -- thus, they conceive of education's goals as extrinsic. Their overly literal societal perspective results in a narrowed focus on basic, traditional subject matter, and in rejection of the idea that schooling should affect values and dispositions as well as subject matter knowledge.

At twelfth grade, students are beginning to adopt a more integrated orientation toward education. They are as aware as ninth graders that education exists in a societal context, and that it therefore has extrinsic consequences. But twelfth graders are perhaps beginning to see that societal and personal goals need not be in conflict. Both the societal and personal perspectives support the importance of education's intangible benefits: the valuing of learning for its own sake, familiarity with nonacademic subjects, and acquisition of positive values and dispositions. The twelfth graders' orientation toward education can thus be seen as a reconstruction of knowledge held at younger age levels. Further research is of course needed to evaluate the merits of the proposed interpretation.

Footnote

[1]Various reasons probably account for why these particular items turned out not to be reliably associated with their intended categories. Item 4, "What is education," was too abstract for many subjects. Item 5, "Does education happen out of school" yielded idiosyncratic responses not related to the intrinsic-extrinsic dimension. Item 6, "Do most kids want to go to school," and item 17, about the importance of trying to appear smart, elicited opinions about specific persons as often as discussions of human nature. Item 10, about the first persons to do addition, apparently called for hypothetical reasoning beyond many students' reach.

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Table 1

Factor Matrix Indicating Groupings of Topics According to the Importance of Teaching them in Schools.

Topic	Factor 1	Factor 2	Factor 3
1. English	-.12	.88*	.08
2. Math	-.36	.74*	.01
3. Reading	-.34	.76*	.18
4. Science	-.37	.03	.50*
5. Social Studies	-.43	.20	.38*
6. Art	-.07	.01	.74*
7. Computers	-.12	.13	.57*
8. Gym	-.01	.25	.60*
9. Health/Safety	.21	-.24	-.04
10. Music	-.23	-.11	.62*
11. Behavior/others	.79*	-.39	-.07
12. Indep. thinking	.47*	-.29	-.26
13. Learn to learn	.45*	-.26	-.15
14. Manners	.78*	-.27	-.15
15. Work habits	.50*	-.05	-.12

Note. Varimax rotated factors are shown; identical factors are obtained with quartimax rotation.

*Items within each column that were selected as representative of the given factor.

Table 2

Age Trends for Composite Variables.

Dependent Variable	Mean score by grade 3	6	9	12	linear F(1,66)	quadratic F(1,66)
Intrinsic goals	1.40	.65	.40	1.06	3.38	6.76**
Active learning	.60	1.10	1.30	1.60	11.34***	.27
Dynamic intelligence	3.25	4.97	4.46	4.34	2.69	4.55*
Tradit. objectives	14.87	17.57	18.05	17.40	8.30**	5.34*
Nontradit. object.	5.72	7.85	8.91	9.15	12.95***	1.65
Meta-educ. object.	12.07	4.95	6.14	9.26	5.66*	22.19***

Note. Intrinsic goals and active learning scores range from 0-3, whereas dynamic intelligence scores range from 0-6. All three educational objectives scores range from 0-20.

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 3

Age Trends for Rankings of Metaeducational Objectives

Dependent Variable	Mean score by grade 3	6	9	12	linear F(1,66)	quadratic F(1,66)
Behavior/others	10.40	3.55	4.85	9.20	1.22	11.95***
Indep. thinking	12.25	4.35	6.70	9.50	2.30	13.02***
Learn to learn	12.65	8.40	8.45	12.10	.52	4.80*
Manners	12.15	2.25	4.40	8.80	4.25*	22.31***
Work habits	12.90	6.20	6.30	6.70	9.38**	5.86**

*$p < .05$; **$p < .01$; ***$p < .001$.